

GENERAL DESCRIPTION.

LOCATION AND AREA.

Cuba is the largest, most populous, and most western island of the Antilles. Shaped like the arc of a circle, with its convex side to the north, it extends from 74° to 85° west longitude and from $19^{\circ} 40'$ to $23^{\circ} 33'$ north latitude. It is about 100 miles from Florida, being separated from it by the strait of the same name. About 50 miles to the east is Haiti; about 85 miles to the south is Jamaica; and about 130 miles to the west is the Yucatan peninsula. Its length is about 730 miles (1,594 kilometers); its breadth differs, ranging from 160 miles (200 kilometers), in Oriente province, to 22 miles (40 kilometers), in Habana province. Its total area is 44,164 square miles, of which Cuba occupies 41,634 square miles, the Isle of Pines, 1,180, and the other islands and keys, 1,350. Cuba is larger than Portugal, Belgium, or the Netherlands, and somewhat smaller than Pennsylvania or Virginia.

From a military point of view Cuba occupies a strong strategic position, controlling the entrance of the Gulf of Mexico by the Strait of Florida, the Windward Passage to the Caribbean Sea between Cuba and Haiti, and the Yucatan Channel connecting the Gulf of Mexico with the Caribbean Sea. The first and last of these are the only entrances to the Gulf of Mexico, which is thus controlled completely by the Island of Cuba.

The government of Cuba has jurisdiction not only over the island of that name, but also over the Isle of Pines, lying directly to the south of it, and more than a thousand islets and reefs scattered along its northern and southern coasts.

TOPOGRAPHY.

The north coast is for the most part steep and rocky, and, in the provinces of Matanzas, Santa Clara, and Camagüey, it is bordered by lines of islands and reefs of coral formation, through which passage is extremely intricate and difficult. These islands are low, are in the main covered with mangrove forests, and contain few inhabitants.

The coast in the western part of the island is low, the bluffs ranging about 100 feet in height in Pinar del Río and rising gradually eastward. In Matanzas they reach 500 feet in altitude. In Santa Clara and Camagüey they are lower, but in Oriente the coast is abrupt and rugged, being almost mountainous and rising in a succession of terraces.

The south coast from Cape Maisi to Cape Cruz is mountainous. Indeed, from Santiago westward to Cape Cruz the Sierra Maestra rises abruptly from the water to altitudes of several thousand feet. The shores of the Gulf of Buena Esparanza are low, and with the exception of a short stretch between Trinidad and Cienfuegos, the coast is low and marshy from this gulf to Cape San Antonio, the westernmost point of the island. The strip of marsh is in the main narrow, but west of Cienfuegos it broadens until it covers an area 75 miles in length and fully 30 miles in breadth at its widest point. This almost impenetrable region is called Zapata swamp. It is clothed with the densest vegetation and teems with tropical life.

The central provinces of Cuba consist mainly of broadly rolling plains with shallow stream valleys. In Habana, Matanzas, and Santa Clara these plains were, prior to the late war with Spain, in a high state of cultivation, while those in Camagüey have been in the main used for the grazing of cattle. The valley of the Yumuri, in Matanzas, is typical of the beautiful, highly cultivated portion of this part of the island.

Most of the harbors are of peculiar shape, resembling pouches with narrow, often sinuous, entrances, opening into broad, completely sheltered expanses. This is the character of the harbors of Bahía Honda, Cabañas, Habana, Santiago, Cienfuegos, Guantánamo, Nipe, and many others that are not so well known.

Off the south coast are hundreds of low, marshy mangrove-covered islands and islets.

The Isle of Pines, with an area of about 1,200 square miles, is in effect two islands, connected by a marsh; the northern part is somewhat broken by hills, while the southern part is low, flat, and sandy.

OROGRAPHY.

In its relief the Island of Cuba is marked by great variety and irregularity. At the two extremes of the island, in Pinar del Río on the west and Oriente on the east, there are well-defined ranges of hills. A little north of the middle line of the province of Pinar del Río, a range of hills closely parallels the northern coast. This range, known as the Cordillera de los Organos, or Organ Mountains, is fairly well defined, and rises in many places to altitudes exceeding 2,000 feet, culminating in Pan de Guajaibon, having an altitude of 2,500 feet. From the crest of this range the land descends to the coasts in long, undulating slopes, the southward slopes forming the celebrated tobacco lands known as Vuelta Abajo.

The Sierra de los Organos ceases as a range a little west of Habana, but traces of this uplift can be followed through the central part of Habana, Matanzas, Santa Clara, and the western part of Camagüey in the form of lines of hills of no great altitude dotting the extensive plains. They are seen south of the city of Habana in the hills known as the Tetas de Managua, and farther east in the Arcas de Canasi, the Escaleras de Jaruco, and the Pan de

Matanzas, just south of the city of Matanzas. In the eastern part of Matanzas province these hills disappear, but they reappear in Santa Clara, taking the form of elongated crests and flat top summits, and as such extend into the western part of the province of Camagüey.

In the southern part of the province of Santa Clara is a group of rounded hills, occupying an area between Cienfuegos, Trinidad, and Sancti-Spiritus. The highest of these, Potrerillo, has an altitude of 2,900 feet. Among these hills are many beautiful valleys.

The surface of Oriente is broken with high, sharp mountain ranges, broad plateaus of considerable elevation, and deep valleys, some of which are broad, while others are narrow and resemble canyons. The dominating orographic feature of this province—indeed of the whole island—is the Sierra Maestra, which, commencing at Cape Cruz, south of Manzanillo, extends eastward, closely paralleling the coast, from which it rises abruptly, as far east as the neighborhood of Santiago. In this part it contains many points exceeding 5,000 feet in altitude and culminates in Pico Turquino, which is reputed to have an altitude of 8,320 feet.

From Santiago the range extends to the east end of the island, where it is broken to a greater extent, and where its form is more like that of a low plateau. This portion of the range is known as the Cobre range. It contains numerous flat summits, approximating 3,000 feet in altitude, one of which, known as La Gran Piedra, is said to have an altitude of 3,300 feet.

North of Sierra Maestra lies the broad and fertile valley of the Cauto, beyond which the country rises gradually to a high plateau, occupying the interior of the province, a summit elevation of 1,000 feet or more. The eastern part of the province consists of a maze of broken hills, with altitudes ranging from 1,000 to 2,000 feet, in which are many small fertile valleys.

HYDROGRAPHY.

The rivers of Cuba, though numerous, are short, and few of them are of any importance for navigation. The largest stream is the Río Cauto, which heads in the province of Oriente, on the north slopes of Sierra Maestra, flows westward through a broad valley, and empties in the Gulf of Buena Esperanza, after a course of about 150 miles. This stream is navigable for light draft boats as far as Cauto Embarcadero, a distance of about fifty miles.

Several other streams are navigable for a few miles above their mouths, but in most cases only through what may be regarded as estuaries.

GEOLOGY.

The island has a foundation of pre-Tertiary sedimentary rocks in which Cretaceous and probably Jurassic fossils have been found. Above this there are littoral beds composed of terrigenous material and then a great thickness of white limestone, consisting of organically derived oceanic material, as distinguished from true reef rock of late Eocene and Oligocene age. The

island was reclaimed from the sea by a great mountain-making movement in late Tertiary time, succeeding the deposition of this limestone. In the Pliocene and Pleistocene epochs, the island underwent a series of epeirogenic subsidences and elevations which affected the coastal borders, producing cliffs and the margin of elevated reef rock which borders the coast in many places, as in the neighborhoods of the cities of Habana and Baracoa.

So far as its history is known, the island has never been connected with the American mainland, although such has frequently been asserted to be the case. These assertions have been based upon the erroneous identification of certain vertebrate animal remains. There are no traces in the animal life of Cuba which justify this conclusion. Some of the crystalline rocks may be ancient, but most of them are mid-Tertiary in age.

The caves of Bellamar, near Matanzas, are of marvelous beauty, and are visited by all tourists; in Camagüey the caves of Cubitas, and in Oriente the one called Nueva del Negro, near Baire, are also noteworthy.

FLORA.

The flora of the island is noted for its abundance and beauty, and caused Cuba to be designated the Pearl of the Antilles. Over 3,350 native plants have been catalogued. Humboldt said: "We might believe the entire island was originally a forest of palms, wild limes, and orange trees." The flora includes nearly all of the characteristic forms of the other West Indies, the southern part of Florida, and the Central American seaboard. Nearly all the large trees of the Mexican tierra caliente, so remarkable for their size, foliage, and fragrance, reappear in western Cuba. Over 30 species of palm, including the famous royal palm (*oreodoxa regia*), occur, while the pine tree, elsewhere characteristic of the Temperate Zone and the high altitudes of the Tropics, is found associated with palms and mahoganies in the province of Pinar del Río and the Isle of Pines, both of which take their name from this tree.

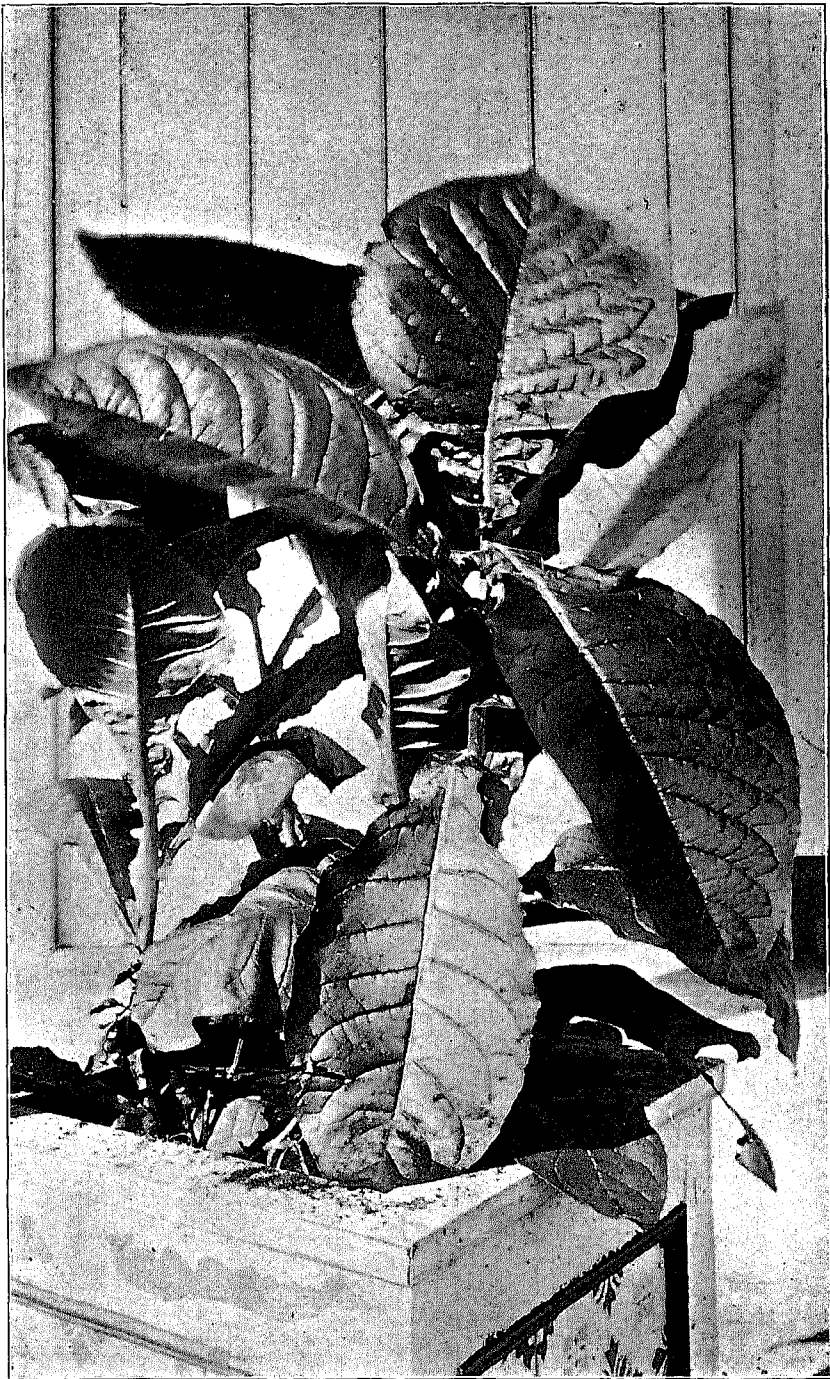
Among other woods are the lignum-vitae, granadilla, cocoa wood, mahogany, and cedrella odorata.

Although three hundred years of cultivation have exterminated the forest in the sugar lands of the center and west, it is estimated that in the hills of those districts and in the mountains of the east nearly 13,000,000 acres of uncleared forest remain.

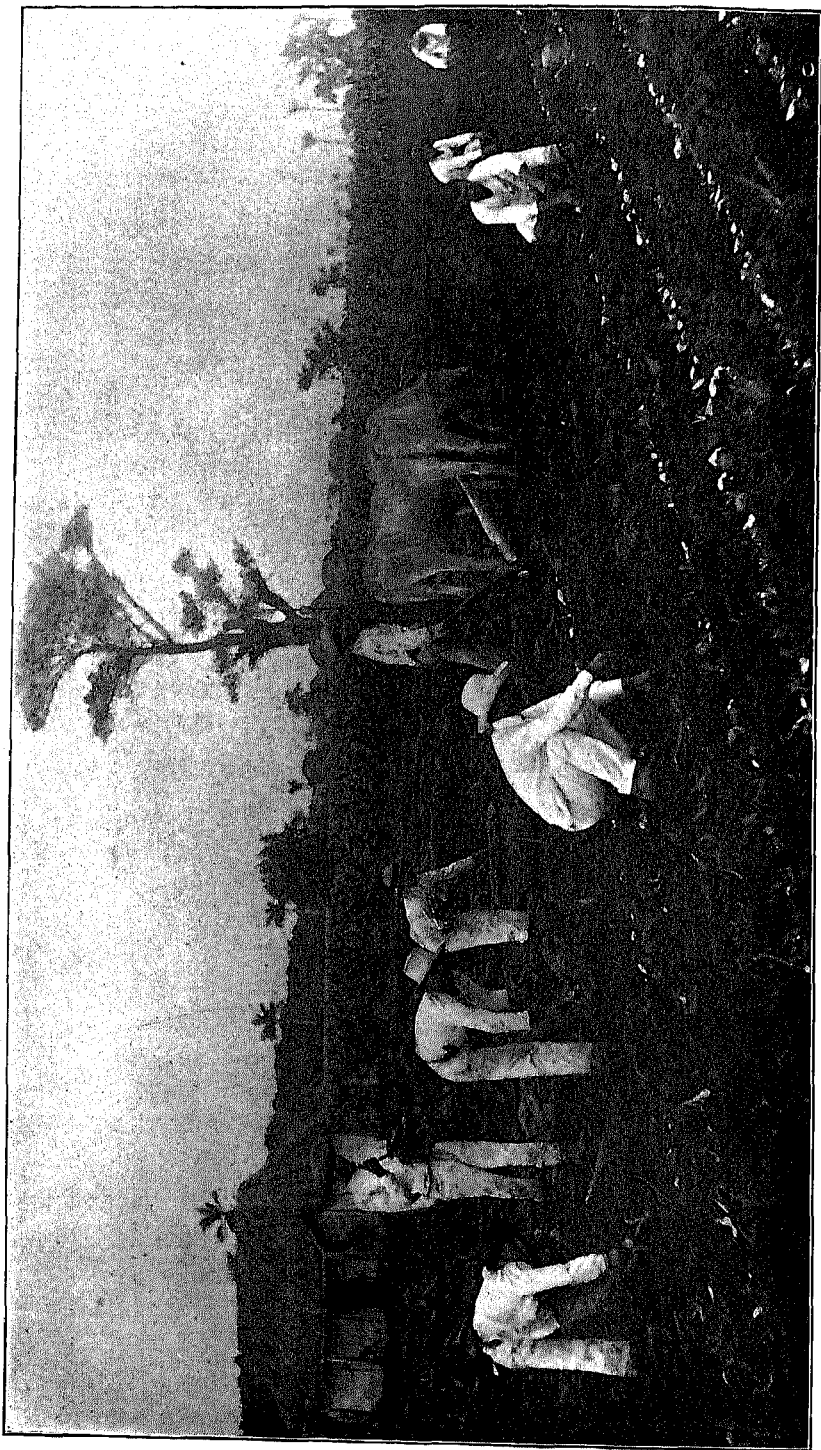
Rich and nutritious grasses are found throughout the island, affording excellent forage for stock. The pineapple, manioc, sweet potato, and Indian corn are indigenous to the island.

FAUNA.

Throughout Cuba game is abundant. Deer, though not native, have flourished and multiplied greatly. Rabbits also are plentiful. The wild boar, the wild dog, and the wild cat are simply domestic animals run wild,



A TOBACCO PLANT.



SETTING OUT YOUNG TOBACCO PLANTS

and are quite numerous in all parts of the island. Wild fowl, especially ducks and pigeons, abound, the former crossing from the Southern states during the winter season, the latter remaining in the island the year round. Pheasants, quail, snipe, wild turkeys, and wild guinea fowl are also numerous, with several varieties of game birds, such as the perdiz, tojosas, rabiches, and the guanaros.

Cuba has more than two hundred species of native birds; many possess the most beautiful plumage, but those with song are rare.

The only distinctive native animal is the jutía, or hutia, which is rat-like in appearance, and grows to a length of from 16 to 18 inches, not including the tail. While edible, it is not especially palatable.

In swampy localities crocodiles and American alligators are found, and although these frequently grow to an enormous size, but little attention is paid to them by the natives. Chameleons, small lizards, tree toads, and similar harmless reptiles of diminutive size are very common, while occasionally the iguana and other large varieties of the lizard species are seen.

Few varieties of snakes exist in Cuba. One variety, the maja, from 10 to 14 feet in length, is most frequently found about the huts, farm houses, and small villages, its favorite living place being in the palm leaf thatches of the older buildings, while its favorite food is poultry. Another snake, named the jubo, is more vicious in disposition than the maja, although never reaching more than one-third its size. It is not poisonous. The other varieties are still smaller in size and are not venomous.

NATURAL RESOURCES.

By FRANCISCO I. DE VILDÓSOLA, Secretary pro tem of Agriculture, Labor, and Commerce.

The principal element of the strength of Cuba is in the productions of the soil. This has been the condition in the past and will be the condition for a long time to come. The productions are far in excess of the amount of effort put forth, and are so out of proportion to the number of inhabitants that the problem of a permanent market and the difficulty of securing it are questions of the utmost importance in their bearing upon Cuban wealth.

Although nearly all the new sources of riches are at present in embryo, they are so numerous and so varied that it seems advisable to classify them.

PRODUCTS OF THE ANIMAL KINGDOM.

The productions of the animal kingdom which are utilized in Cuba are of two origins: those which live on the land and those which are obtained from the sea, the rivers, and the lakes. The principal land products are cattle, horses, swine, poultry, and bees, while sheep and goats are raised in small numbers. During the past months an experiment has been made in an industrial way in the raising of ostriches, but as yet we have no data and the experience has not been sufficient to judge of this new industry. Fish and sponge form the leading water products.

Cattle.—The position of the Island of Cuba makes a veritable Eden of this country for the raising of live stock. Herbivorous animals multiply so rapidly that notwithstanding inadequate methods for the breeding and betterment of the cattle, and notwithstanding the fact that they are cared for in the rudest and most primitive way, not only are those necessary for agricultural work and for the slaughterhouses obtained, but the production is rapidly surpassing the needs of the Nation.

Under the Intervention of the United States restrictive laws were promulgated in regard to the slaughter and exportation of cattle, and, in addition, a department was created which publishes and distributes gratuitously vaccine virus for epizootic diseases.

The following table shows data concerning the number of cattle and the number killed in the slaughterhouses since the Independence:

YEAR.	Total number.	Number killed in slaughter-houses.
1906.....	2,579,492	228,108
1905.....	2,176,178	219,038
1904.....	1,999,512	194,513
1903.....	1,308,650	179,832
1902.....	999,862	176,962

From these figures it will be seen that the increase in the number of cattle in 1906 as compared with 1902 was 158 per cent, while the corresponding increase in the consumption of cattle in the slaughterhouses was 28.9 per cent.

Considerable quantities of salted and canned meats and even live cattle are imported into Cuba.

Only a small portion of the offal of slaughterhouses is used in Cuba; the greater part is exported as raw material. Hides are included in the exports, since the tanning industry is unimportant.

In agriculture, oxen are used almost exclusively for ploughing and hauling, for as yet the use of mules has been quite limited, and all the experiments which have been made with steam implements have resulted unfavorably.

The milk industry, notwithstanding the great quantities of cattle raised and the large number of milch cows of good breed that have been imported from the United States, is not a lucrative source of wealth, and its products are so insufficient that in most of the cities condensed milk is imported from the United States and England.

Horses.—The trade in horses, mules, and asses has not been developed in Cuba as extensively as might be expected from the natural conditions of the country.

The actual statistical distribution of this source of wealth on December 31, of each year from 1902 to 1906, is as follows:

YEAR.	Horses.	Mules.	Asses.
1906.....	402,461	51,333	2,635
1905.....	342,568	45,559	2,580
1904.....	266,071	43,714	2,331
1903.....	208,009	33,402	1,882
1902.....	167,933	30,950	1,838

The increases in 1906, as compared with 1902, have been: for horses 139.7 per cent; mules, 65.9 per cent; and asses, 43.4 per cent.

Swine.—It is apparent that Cuba is the natural home for this class of animals. A litter is produced in so short a time that it is difficult for the owner to know how many swine he has; and the ability to reproduce is almost incredible.

The spotted fever epidemic is apt to cause an enormous mortality, but

generally many years elapse between the appearances of this epidemic, and a sufficient number of animals survive to reproduce the herd in a short time. Although there is a virus for spotted fever, and the Secretary of Agriculture distributes it gratuitously, it is not always efficacious. The mercantile method of breeding swine consists in leaving them free in the pasture to provide for their own wants.

Poultry.—Poultry is raised with the greatest ease and profit, but poultry-raising on an industrial scale does not exist; each rural breeder can succeed without effort and can sell his products to speculators, who transport them to the merchants of the towns. Despite the lack of more efficient methods the production is sufficiently great for home consumption.

Bees.—A country like Cuba, with an exceedingly mild climate, with fields continually decked with flowers and with no natural enemies capable of producing havoc among the hives, is a country in which apiculture should flourish. Because of the scarcity of population, however, and the facilities for making money in other industries, apiculture has not received sufficient attention to make it a source of wealth. At present there are 4,200 apiaries having over 120,250 hives, producing for the market 470,000 gallons of honey and 31,000 arrobas (775,000 pounds) of wax.

Fish.—The seas which surround Cuba constitute an immense natural maritime fish hatchery, on account of the temperature of the water and the many keys and shoals. For this reason fish products have always been exceedingly abundant.

Although the coasts of Cuba have lacked until now maritime police for the protection of their fisheries, and although the most reprehensible methods have been constantly employed, the wealth in fish is very great.

In addition to the fish, *caguamas* are gathered in the Cuban seas in small numbers; turtles to the number of 500 or 600 a year; and the rich tortoise shell in such quantities that the total amount for the past year was more than 1,000 kilos.

Another exceptional source of wealth of the sea is the sponge; 310,000 dozen were procured in 1907. Among the Cuban sponges is one which is believed to have no equal in the world and the exploitation of which would be of an enormous mercantile value; this is the sponge called "machito del calvario," found near Brabant.

PRODUCTS OF THE VEGETABLE KINGDOM.

Each of the three geographical divisions of the Island of Cuba has essentially its own agricultural productions as well as products that are common to all. Thus, in the Eastern division, the coconut produced in the district of Baracoa has no rival in Cuba for quality and abundance, nor can it be easily excelled outside of Cuba. In the extensive Central division, especially in the rich province of Matanzas, sugar cane is cultivated under favorable conditions. In the Western division, the Vuelta Abajo tobacco is cultivated.

Sugar cane.—Of all the sources of agricultural wealth of the Island of Cuba, that which should be considered first is the sugar cane, since it is that which covers the greatest extent of territory, employs the greatest number of men, and has the greatest commercial importance.

The climatic conditions and the nature of the soil are so favorable for the cultivation of sugar cane that the sugar production has been steadily increasing for many years, in spite of the fact that the lack of economic methods is ruinous to the engines and retards the work. At times political crises have diminished the production, but the industry has soon recuperated and produced an output greater than before. This fact shows that the production of sugar cane in the Island of Cuba is so in accord with natural conditions that it seems probable that the definite issue in the world wide sugar war will finally be with Cuba.

Tobacco.—This solanaceous plant, whose rich leaf as produced on Cuban soil is reputed to be the best in the world, is indigenous to the island and occupies the second place among the Cuban plants. Although it is not cultivated as extensively as sugar cane, it is used in two important industries, one of which is engaged in preparing and packing the weed for export, and the other in manufacturing the millions of cigars and cigarettes consumed in the country or exported. The latter industry, representing considerable wealth and giving employment to an increasing number of skilled workmen, contributes largely to the welfare of the laboring classes of the cities.

Tobacco requires for its cultivation a loose, rich, sandy soil, the best for the purpose being found in some localities in the province of Pinar del Río, especially in the southern portions, where the land produces the fine tobacco that brings the highest prices paid, particularly in England and the United States.

A plant of fairly good quality is produced in the central and eastern portions and even in the western portions of the island, especially on the northern watershed of the Sigüanea river in the province of Santa Clara, on lands east of the Arimao river in the famous Manicaragua vegas.

Notwithstanding its well earned fame, the Cuban product can not reach the development it should, inasmuch as all countries consider tobacco an assessable article and endeavor, besides, to protect their home product by burdening the imported article with high import duties, which in some cases become almost prohibitory. One of the nations in which the conditions are most favorable for the consumption of Cuban tobacco without injury to its own products is the United States, and it is certain that quantities of Cuban tobacco will be consumed there when the effects of the recent reciprocity treaty between the latter nation and Cuba become thoroughly known and the advantages are fully appreciated by both sides.

Many tobacco planters are adopting the system of cultivating the leaf under cover or with mosquito nets, as the natives call it, which merely means that they place an awning of cheese cloth 2 or 2½ meters above the plants. This

serves to temper the intensity of the sun's rays, to moderate the force of the wind and its action on the leaves, to keep the earth moist, and, above all, to prevent the insects from harming the leaves of the plants. Much interest has been manifested in this use of cheese cloth, and in order to encourage this new industry, the duty on cheese cloth, ranging from 15 to 50 cents per kilogram (2.2046 pounds), was repealed July 30, 1902. It is believed that Cuba may rival Sumatra in the production of fine wrappers, for which there is a large demand in the United States.

The amount that must be expended on one caballeria (an area of 33½ acres) of ground from the time it is plowed until the tobacco crop is gathered, varies considerably, but it is probable that the expenditure averages about \$7,940. The yield of a caballeria, consisting on an average of 211 tercios (bales) of tobacco leaves at \$50 per tercio, 54 arrobas of seed at \$4, and 12 cartloads of stems at \$1, would be about \$10,778, leaving a balance as profit of \$2,838.

Since the War of Independence remarkable progress has been made in the cultivation of tobacco, and excellent results are being obtained as regards the endurance of the plant, as well as its quantity and quality. Moreover the prospect of a market is good. Consequently a crop that formerly was uncertain and dependent on meteorological conditions is to-day, for the most part, subject to the intelligent control of man.

The past year the production of tobacco amounted to 201,512 bales, weighing 109,562,400 Spanish pounds.

Coffee.—When the production of tobacco was of slight importance and that of sugar barely exceeded home consumption, coffee formed the principal Cuban product, and, together with cattle, constituted the basis of its economic wealth.

In the year 1846, 2,328 coffee plantations in the Island of Cuba produced 50,000,000 pounds of coffee, which was sold at high prices, principally in Vienna, at that time the leading coffee market of the world; but since then, the constant over production and the fall of prices have created a variable condition, which continues in the markets of the world. When it will terminate can hardly be predicted.

The coffee plantations in Cuba were reduced to less than two hundred small farms; consequently it was necessary to import the greater part of the coffee which was consumed in Cuba. These farms, although of slight importance, continued to exist, because in Cuba coffee is produced with no more effort than that required to plant the trees, which last for centuries, and to gather the fruit, which is always so abundant that it can not be harvested by the available hands.

After the Independence, a law passed by the Cuban Senate, May 30, 1903, created tariff rates for the coffee which is imported into Cuba, and in consequence of this protection, in the short space of time which has elapsed, the number of coffee plantations has quadrupled, and before many years Cuba

will produce all the coffee necessary for home consumption. In 1907 there were 1,411 coffee plantations, with 3,662,850 coffee trees, which produced 6,595,700 pounds of berries.

The Coconut.—Throughout the Island of Cuba, the coconut is produced with almost no effort; but the district of Baracoa may be considered a natural zone of monopoly for this plant. The facts relating to the coconut industry seem almost improbable; in Baracoa, under normal conditions, it is sufficient to plant the tree and leave it to develop; in four or five years it yields fruit so abundantly that in quantity and value the output is 50 per cent greater than that of any other region of Cuba.

The nuts which fall from the tree (those which "drip," in local terms) are gathered and sold for not less than a cent apiece, so that each tree—and the average production is seventy coconuts a year—yields no less than fifty cents profit. Fifteen years ago, with practically no effort, from twenty-five to thirty millions of coconuts were gathered annually.

An *epifitia* of the branches destroyed the coconut groves fifteen or twenty years ago, and later, another disease in the heart of the tree developed, completing the havoc, which caused the value of the crop in 1906 to fall to only 175,000 pesos.

The learned professor, Dr. Carlos de la Torre y Huerta, has described perfectly the disease of the branches of the coconut tree, showing the nature of the pathogenic parasite; and the studies by Mr. Horne, professor of the Central Agricultural Station of the Republic, have practically determined the manner of effectively combating the two diseases.

The wealth resulting from the cultivation of the coconut is not derived merely from its sale as fruit; for it is utilized for the sustenance of animals, and serves as raw material in the manufacture of oil.

Cacao.—Humboldt said that the wealth of the proprietor of a cacao plantation was surer than that of the possessor of a gold mine. Although the cacao produced in this island is not comparable with that of Caracas, a cacao of a quality superior to the average is obtained in the province of Oriente. In spite of the difficulties of the cultivation of the cacao and the damages caused by birds, the production increased from 800,050 bushes, yielding 3,122,600 Spanish pounds, in 1902, to 1,860,306 bushes, producing 9,380,900 Spanish pounds, in 1907.

Textile plants.—Many varieties of textile plants grow in Cuba, and those which cover the uncultivated fields are sufficient to produce many hundred thousands of tons of useful fibers. This wealth, however, has been utilized only recently, and the country every year pays tribute in many millions of pesos to foreign countries, because of the lack of population, machinery, and industrial enterprise.

Since the Independence, there has been some activity in this direction, and results of real importance are now being obtained.

The cordage industry has developed the fact that the raw material may be

obtained in Cuba, there being sufficient plantations of heniquen to almost wholly supply the necessities of the Republic. During the period of production the number of heniquen bushes in the island reaches 3,700,000.

Seven million pounds of *jarcias* are manufactured in the Island of Cuba, 70 per cent of which are of henequin and the rest of manila, fiber from the Philippines being imported for the latter.

For the sugar industry Cuba receives from India and England—the first the producer and the second the manufacturer—from seven to ten million bags of jute in which the sugar is annually packed. Jute grows wild in the island, however, and at present in the province of Pinar del Río, where an effort is being made to cultivate it, it yields more than 30 per cent of fiber of good quality.

A short time ago it was considered impossible to make an industrial use of the ramie, which grows so abundantly in this island, but repeated and successful experiments with the “Marti machine” have proved that the strips of ramie known in the market as “China grass” can be obtained, and the day is near at hand when the exploitation of this, the richest vegetable fiber for textiles, will constitute one of the important sources of Cuban wealth.

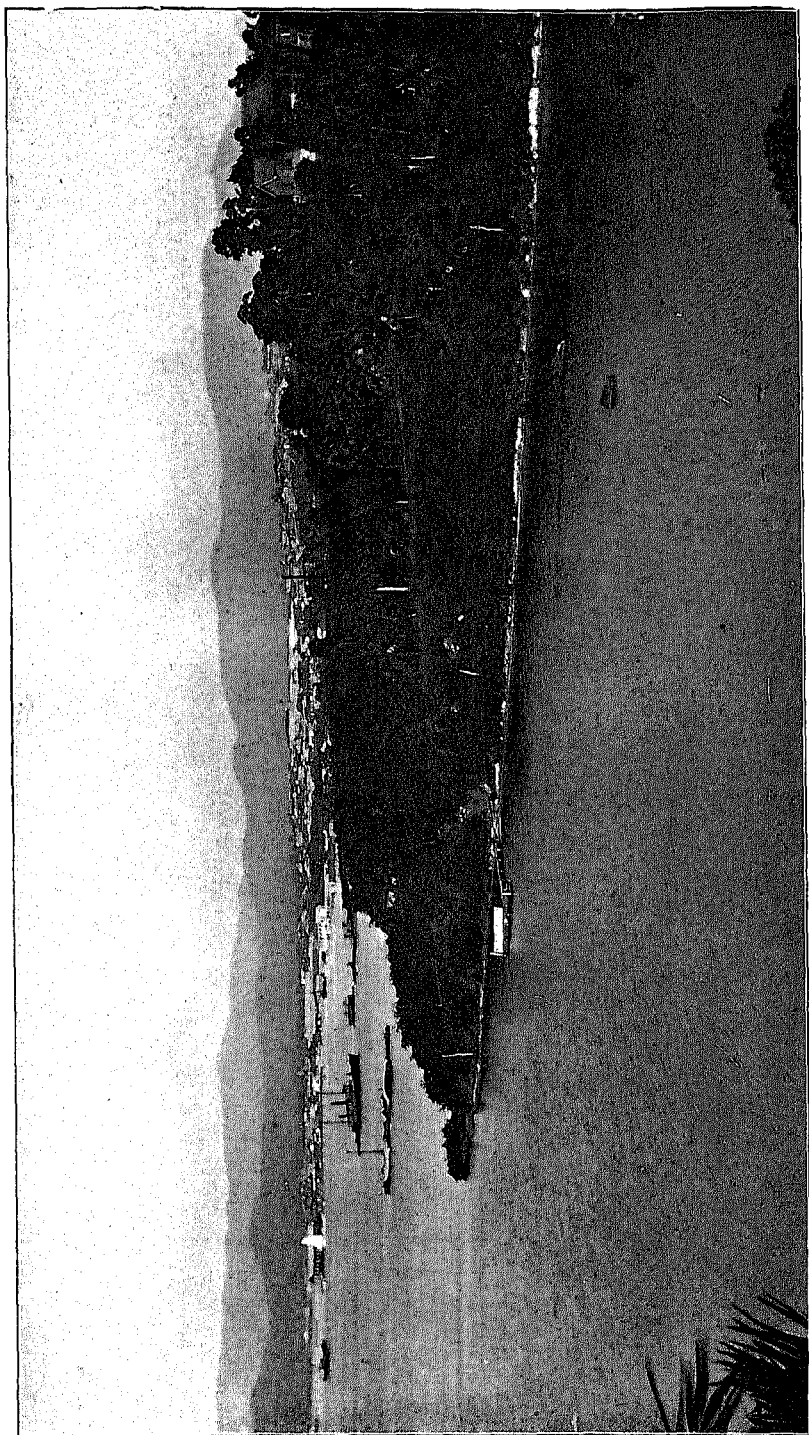
FRUITS.

Fruits have only very recently been cultivated on an industrial scale in the Greater Antilles; it may be said that this is an industry which is just being developed and in which the greater number of products are yet unimproved, and that those which are actually utilized will undergo a radical transformation.

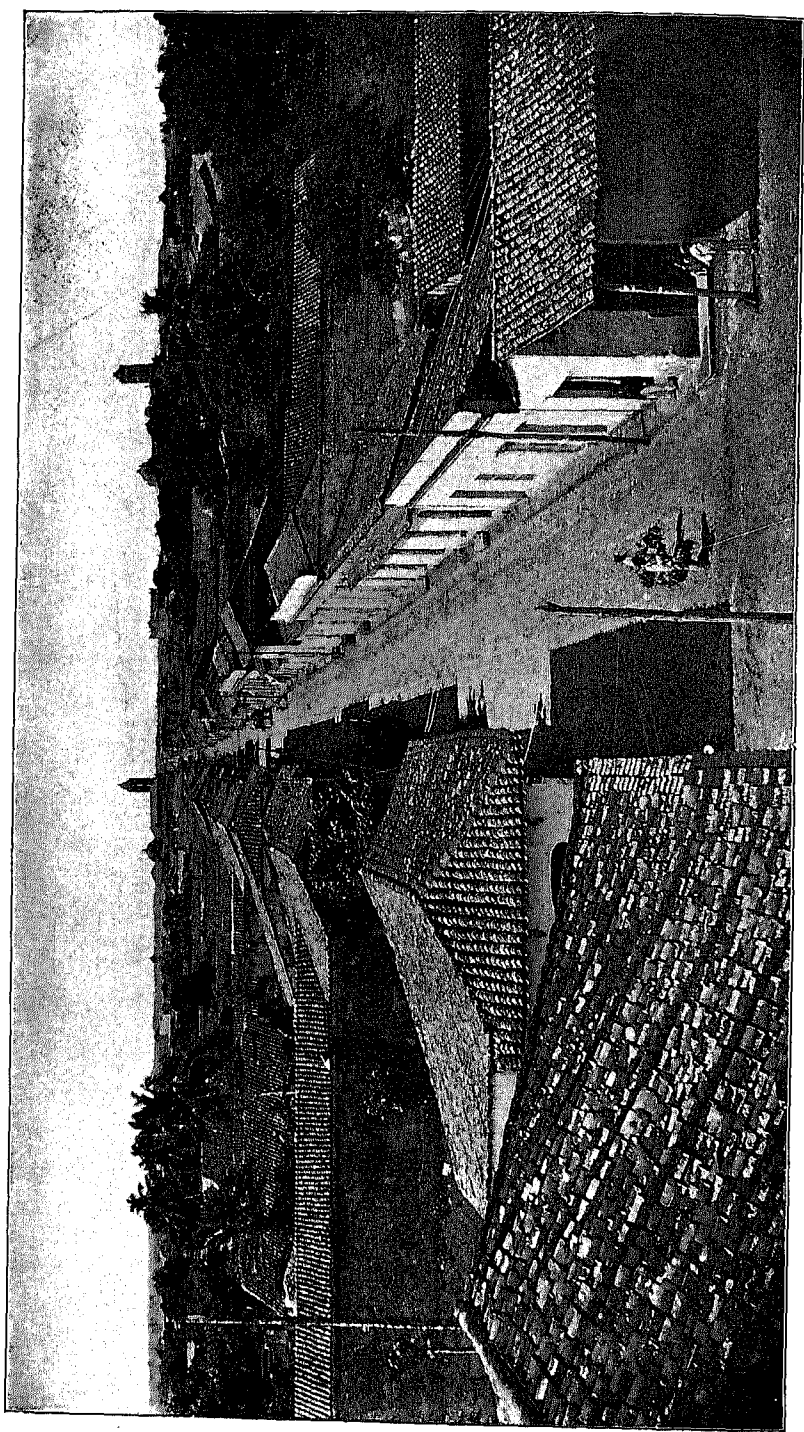
Citrus fruits.—The first place will at once be given to the citrus plants, which have as ready a market in the United States as those of Spain have in England.

Sweet oranges are at present the preferred crop, there being more than 1,500,000 trees ready to fructify, the probable yield of which will be worth at least 3,000,000 pesos annually. But the grape fruit, which grows wild and which, when cultivated, will yield prodigious crops; lemons, of which millions of pounds are now exported; and the bitter oranges, of which there are wild groves, are citric plants of greater commercial importance than the sweet oranges and are grown with much less effort. The bitter orange especially holds an important place among the Cuban fruits, since it constitutes the first and indispensable ingredient for orange marmalade. Since the fruit grows here under such favorable conditions and sugar cane also is abundant, no fears are felt for the future of the marmalade industry.

Pineapple.—The pineapple has always been considered the queen of fruits, and the constant demand by the great neighboring Republic has stimulated its cultivation to such an extent that at present the annual production is between 25,000,000 and 30,000,000 kilograms, with an approximate value of 1,000,000 pesos. Now that the supply of the pineapples is greater than the



SANTIAGO DE CUBA.



demand, the consumer profits by the competition of the producers, and the grower who markets the best grade of fruit is benefited commercially.

Plantain.—Notwithstanding the natural advantages that the lands of the Central American continent possess over those of the Island of Cuba, and notwithstanding the fact that this island may be considered the extreme limit for the production of plantain, the fertility of the soil and the favorable meteorological conditions supply the deficiencies of geographic situation, and the result is that Cuba produces the enormous quantity of plantains consumed by her people—or more than 120,000,000 kilograms—and, in addition, exports from 45,000,000 to 50,000,000 kilos each year.

Other fruits.—Some of the other fruits produced, such as the anón (custard apple), the *caimito*, the mammee, the *guanabana*, the plum, the *sapote*, and the tamarind, are used only for the consumption of the inhabitants of the island; while others, as the alligator pear, the mango, and the guava, are at present exported in small quantities—600,000 to 800,000 kilos per year, valued at from \$20,000 to \$22,000—although the demand for them is growing.

Vegetable products.—Until the importation of Chinese, from 1860 to 1867, it was difficult, even for wealthy persons, to obtain vegetables for consumption. The Chinese, when they were freed from their slave contracts, promoted the cultivation of vegetables, increasing it sufficiently to abundantly satisfy local necessities; but Caucasians have since realized the benefit of an export trade of Cuban vegetable products to the United States.

Soon after the Independence, several thousand cases of vegetables were exported from Güines, and the growth of the industry has been such that during the fiscal year 1906-7 the exportation reached 3,994,067 kilos, which sold for \$167,435. These figures show the possibility of a trade which promises to be much more extensive in the near future.

FORAGE PLANTS.

At the Central Agricultural Station experiments have been made with nearly all of the important forage plants, and in every case the result of the trial has been to prove the possibility of satisfactory production; but the fields of Cuba are stocked with so many first-class graminaceous forage plants that, until now, the necessity of cultivating such crops has not been felt, except in the vicinity of the large cities, where the millet and *maloja* (corn stalks used for fodder) produced throughout the year, with very slight effort, furnish great quantities of green forage of very good quality.

GRAINS.

The grain producing countries are in the Temperate Zone, but the Island of Cuba, situated in the extreme north of the Torrid Zone, has the advantage, as a subtropical country, of being able to produce grains, or at least several kinds of grain, in quantities that satisfy home necessities.

Wheat.—More than a century ago, wheat was sown in the province of Santa Clara, but the crops were not remunerative.

Rice.—All varieties of rice are easily obtained in Cuba, average crops being yielded; ordinarily only the dry rice is cultivated, being produced in small quantities, and sold at a very good price, as its especially agreeable flavor causes the demand to be always in excess of the production.

The consumption of rice in Cuba amounts to no less than 200,000 pounds daily; and if the country were capable industrially of producing this grain, it would do so, for the need is evident and great. In 1906, 101,931,690 pounds, at a value of \$2,035,965, were imported.

What Cubans consider an economic error prevents North Carolina, South Carolina, Louisiana, and other rice producing states of the Union from profiting by a market so ready and convenient.

Indian corn.—This grain is the only one that can be produced in Cuba under as favorable conditions as in its native Mexican soil. Two crops, and sometimes three, are gathered in a year, and it is cultivated on a large scale throughout the island.

Chemical analyses have shown that the Indian corn of Cuba contains a greater quantity of albuminoids, fats, and phosphates than that grown in any other country; on this account it is so highly prized that, in spite of the large crops, it is never sufficient for the nourishment of man and the domestic animals, and thus some importation is necessary. In the year 1906, 65,732,531 pounds, valued at \$661,202, were imported. It is a product that never varies in price in the Cuban market, the only objection to it being that no process has been discovered by which it can be preserved indefinitely.

Millet.—This is a nutritious product which is very easily obtained, but which until now has been cultivated only in some parts of the island as food for poultry and working oxen.

TUBERS AND NOURISHING ROOTS.

The people of Cuba will always be insured against hunger by the abundance of its tuberous plants, which are easily produced throughout the island. Those most commonly cultivated and utilized are the sweet potato, the white potato, the yam, and the arum.

Sweet potatoes.—Sweet potatoes are utilized in two ways: the vines provide a healthful food for cattle, and the tubers, for the nourishment of man, cattle, and fowls. The products are obtained successively in such great profusion that a caballeria produces from 20,000 to 25,000 arrobas (500,000 to 625,000 lbs.) of comestible tubers, or more than four pounds of food per square meter of land, in addition to an enormous quantity of vines.

White potatoes.—These potatoes are not raised in sufficient quantities in Cuba to meet the demand, the greater part of those consumed being imported; and this, notwithstanding the fact that the country is so well adapted for their cultivation that in the district of Güines, where they are grown as luxuries

and for exportation to the United States, the crop rarely falls below 1,000 arrobas per hectare.

Arum.—The arum constitutes a healthful and perfect food; the tuber, after being freed from the earth, can be preserved almost indefinitely; the crop never fails, and the leaves constitute a well-known food for poultry. Small farmers, consequently, gladly sow this useful plant, in spite of the fact that the crop does not exceed 500 arrobas per hectare.

Yam.—The yam may be considered as a tuber *de luxe*, as it requires good earth and much cultivation, and its production rarely exceeds 400 arrobas per hectare.

Roots.—In Cuba, sago, which furnishes a good farina, is scarcely cultivated at present, and, with the exception of the yucca, the cultivation of all other comestible roots is being abandoned. There are many varieties of yucca, but those which are commonly cultivated are the bitter and the comestible yuccas. The bitter yucca, which is poisonous, is used for making starch, constituting the basis of one of the Cuban industries. The comestible yuccas which are cultivated are the Carthagena yucca, which is the most highly prized, and the pink, the yellow, the white, or *bruja*, and the crystal yuccas. All of these are obtained in abundance and with ease, and furnish a wholesome and palatable food. The objection to this tuber is that it can be preserved only a few days after being freed from the earth; but, as a compensation, it serves for making cassava bread which is an invaluable food, as it can be preserved almost indefinitely, is very easily digested, and, at the same time, is nutritious.

LEGUMINOUS PLANTS.

Among the leguminous comestibles, black beans, kidney beans, peas, and chick-peas are cultivated in Cuba on a small scale. All of these are obtained with great ease and in profusion; but the advantages possessed by other countries, where wages are very low and where all these vegetables are grown on a large scale, prevent this branch of agriculture from being developed in Cuba, and it pays to Mexico, Spain, and other countries, without any commercial compensation, \$1,144,252 for these necessities.

OLEAGINOUS PLANTS.

Aside from the coconut and the cacao, which in addition to their multiplied uses serve also as oleaginous plants, other plants that are rich in fatty materials can be cultivated to monetary advantage for the extraction of oils. Prominent among these are the *ajonjoli*, the peanut, and the castor bean.

Ajonjoli.—This plant is cultivated solely for use as a condiment and in making the candy called "alegría," but it is destined to have an important industrial place on account of its oil, which does not become rancid, and which is therefore most valuable in the manufacture of fine soaps.

Peanuts.—The peanut grows abundantly, and although it yields 55 per cent of its weight in oil, it is also used as food and in candy.

Castor bean.—Some seventy years ago, the castor bean was cultivated in Cuba for the extraction of its cathartic oil; since that time its cultivation has been wholly abandoned, but its adaptation to this soil and climate is such that it now grows profusely as a wild plant.

MEDICINAL PLANTS.

The Island of Cuba, though free from wild beasts and venomous reptiles and having no extremes of climate to affect the constitution of man, has, nevertheless, indigenous to her soil, plants of wonderful medicinal virtue. These plants include the *aguedita*, known as a febrifuge; the *gariguasi* and the *caña fistola*, cathartics; the *lirio sanjuanero* (wild lily) and the wild ipecac, emetics; the male fern, the sour pomegranate, and the *apazote*, vermifuges; the *chamisco*, an antasthmatic; the *yagruma*, a tonic for the heart; and several other plants of slight medicinal properties.

GUMMIFEROUS PLANTS.

The only gummiferous plant indigenous to Cuba is the female liana, which contains latex producing caoutchouc; but it is possible to cultivate the *Castilloa Elastica* and the *Manihot Glaziovii* with profit.

FORESTS AND FOREST PRODUCTS.

The forests of Cuba have been, and are still, treated with a shocking vandalism, and no protective law for the woodland is in force. However, the richest woods for cabinetwork and for building abound in such quantities that all of the needs of the country, as well as foreign demands, are satisfied, and a residue of short and corded wood remains, which is destroyed for want of purchasers.

The area of the public forests of the Island of Cuba is not less than 37,000 caballerias, or 496,540 hectares (1,226,454 acres). The most important provinces in respect to public forests are Oriente and Santa Clara. The timber forests of the property of the municipality of Jiguaní, with an area of 46,759 hectares (115,591 acres), have also been included, as they are considered public forests. Following is a statement of the public forests in each province:

PROVINCE.	AREA.	
	Hectares.	Acres.
Total.....	496,540	1,226,454
Oriente.....	210,200	519,194
Santa Clara.....	124,660	307,910
Pinar del Río.....	60,000	148,200
Matanzas.....	46,000	113,620
Camagüey.....	35,680	88,130
Habana.....	20,000	49,400

The names and the applicability of the trees are as follows:

FOR CONSTRUCTION.

COMMON NAME.	Technical name.	COMMON NAME.	Technical name.
Ácana.....	Bassia albescent.	Guayacan.....	Guajacum officinale.
Almendo.....	Laplacea curtyana.	Jaimiqui.....	Byrsonima lucida.
Arabo.....	Erytroxylum obovatum.	Jamaquey.....	Belaira mucronata.
Abua amarilla.....	Zanthoxylum bombacifolium.	Jiqui de costa.....	Malpighia obovata.
Baria.....	Cordia geracanthoides.	Jocuma prieto.....	Syderoxylon mastichodendron.
Carne de doncella.	Byrsonima lucida.	Jucaro prieto.....	Busida capitata.
Caoba.....	Swietenia mahogani.	Maboa.....	Cameraria latifolia.
Cedro.....	Oedrella odorata.	Majagua.....	Hibiscus tiliaceus.
Cocuayo.....	Bumelia nigra.	Moruro de costa.....	Acacia littoralis.
Cuajani.....	Cerasus occidentalis.	Quebra hacha.....	Copalifera hymenifolia.
Chicharron prieto.	Chuncoa abovate.	Roble real.....	Tecoma longiflora.
Dagame.....	Calicophyllum candidissimum.	Sabico.....	Lysiloma sabico.
Fustete.....	Maclura tintorea.	Tengue.....	Poeppigia procera.
Guao de costa.....	Rhus metopium.	Yaba.....	Andira inermis.
Frijolillo amarillo.	Lenchocarpus tatifolius.	Yaiti.....	Excocaria lucida.
Guaguasi.....	Casearia totlodes.	Yaya.....	Gualteria virgata.

FOR TANNING.

Los guayabos.....	Psidium.	Mangle colorado.	Rhizophora mangle.
Marañon.....	Anacardium occidentale.	Mangle blanco.....	Avicennia nitida.
Moruro de sabana.	Petophorum adriatum.	Encina.....	Quercus virens.
Peralejo de sabana.	Byrsonima crassifolia.	Pataban.....	Laguncularia racemosa.

DYEWOODS.

Fustete.....	Maclura tinctoria.	Brazil colorado.	Cæsalpinia crista.
Bija ó achiote anato.	Bixa orellana.	Brazilete.....	Coulteria tintoria.
		Peralejo de monte	Byrsonima cubensis.

OIL WOODS.

Coco.....	Cocos nucifera.	Mamey colorado.	Lucuma bonplandii.
Corojo.....	Cocos crista.	Aguacate.....	Persea gratissima.
Pifion.....	Erythrina corallodendrum.	Encina.....	Quercus virens.

FIBER WOODS (USED FOR CORDAGE).

Daquilla.....	Lagetta lintearia.	Guama comun.....	Lonchocarpus pyxidanius.
Guara comun.....	Cupania tomentosa.	Guacacoe.....	Daphnopsis cubensis.
Majagua.....	Hibiscus tiliaceus.	Corojo.....	Cocos crista.
Majaguilla.....	Pavonia racemosa.		

GUM AND RESIN WOODS.

Almácigo.....	Bursera gummifera.	Abey hembra.....	Papigia excelsa.
Ciruelo.....	Spondias lutea.	Maboa.....	Cameraria latifolia.
Cedro.....	Cedrela odorata.	Mango.....	Manguiera indica.
Copal.....	Voica copal.	Marañon.....	Anacardium occidentale.
Guaguasi.....	Casearia totlodes.	Mamey amarillo.	Mammea americana.
Manajá.....	Rheedia aristata.	Pino.....	Pinus occidentalis.
Copey.....	Citrus rosea.	Yaba.....	Andira inermis.

Fruit trees, etc.—Besides the enumerated species there are about fifty different species of fruit trees and a great number of other trees whose wood is used for fuel, fencing, carpentry, and cabinetwork.

PRODUCTS OF THE MINERAL KINGDOM.

The contemporary historians, on the discovery of America, made especial mention of the mineral wealth of Cuba, although limiting it to gold, silver, and copper, and in regard to the first, expressing themselves in the most glowing terms.

Although the Spanish conquerors knew well the auriferous wealth in Cuba and profited by it—they withdrew their attention from these mines, and with great energy exploited those of less precious metals.

Precious stones are not abundant in Cuba, although fine opals are found in some rivers and streams; in the suburbs of Habana in the Guanabacoa hills there are amethysts; and there is reason to believe that in the eastern province there are beds of emeralds.

Although the mineral wealth of Cuba is considerable and its value is enhanced by its proximity to the United States, for more than half a century capitalists have feared to risk their money in any mining enterprise, chiefly because of the scarcity of laborers and the unstable condition of the country's laws.

The following table gives an idea of the number and area of the Cuban mines, with concessions in force on December 31, 1907:

MINERAL.	PINAR DEL RÍO.		HABANA.		MATANZAS.	
	Number.	Area, hectares. ¹	Number.	Area, hectares. ¹	Number.	Area, hectares. ¹
Total.....	96	5,185	49	2,589	41	2,983
Asphalt.....	28	911	29	956	30	1,459
Coal.....	6	578	8	859		
Copper.....	23	1,206	5	413	3	97
Gold.....	(²)	(²)	1	64	1	125
Iron.....	31	2,140	4	189	3	560
Manganese.....					1	110
Petroleum.....	4	274	2	108	3	632
All other minerals.....	4	76				

MINERAL.	SANTA CLARA.		CAMAGÜEY.		ORIENTE.	
	Number.	Area, hectares. ¹	Number.	Area, hectares. ¹	Number.	Area, hectares. ¹
Total.....	91	4,028	97	5,646	857	72,667
Asphalt.....	12	189	16	218	7	253
Coal.....	2	52			9	521
Copper.....	24	459	27	1,274	223	7,745
Gold.....	(²)	(²)			20	537
Iron.....	14	500	51	4,100	271	44,999
Manganese.....					218	11,364
Petroleum.....					3	405
All other minerals.....	39	2,828	3	54	106	6,843

¹A hectare is equal to 2,471 acres.²Included in "all other minerals."

In the mines in the provinces of Pinar del Río, Habana, Matanzas, and Santa Clara the only work carried on was the work of investigation and exploitation, while it is not known that any mine in Camagüey was exploited. In the province of Oriente a number of mines were being operated.

There are other mineral riches absolutely neglected which are no less important than those mentioned, and which will prove great sources of wealth. Thus vast deposits of iron of very good quality remain unexploited, and there are extensive peat beds which at some future day will be utilized as fuel and in the production of nitrate.